DEPARTMENT OF OBS. & GYNAE

"INTRAVENOUS INFUSION OF TRAMADOL - A SAFE LABOUR ANALGESIA"

Thesis

For

DOCTOR OF MEDICINE

(Obstetrics & Gynaecology)

M.L.B. Medical College

BUNDELKHAND UNIVERSITY

JHANSI (U.P.)

Year - 2007

Kalpana Kumari

Certificate

This is to certify that the work of ***Dr. Kalpana Kumari "INTRAVENOUS INFUSION OF TRAMADOL-A SAFE LABOUR ANALGESIA"*** which is being presented by her as thesis for MD ***(Obstetrics & Gynaecology)***, was conducted in the department of Obstetrics & Gynaecology, under my supervision and guidance. Her observations have been regularly checked and verified by me.

She has put in necessary period of stay in the department according to university regulations.

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When it comes to express the heart felt gratitude towards those who was life and soul to this work, My situation is empty summed up by the lines, When the heart is full, the tongue is silent, "Words–if they could be adequately used – would perhaps still not – suffice in bringing fortunate the totally of my gratefulness for those conveying my feelings in all their humbleness.

It is great privilege to express my deep sense of gratitude to my respected teacher ***Dr. S. Kharakwal*** M.D. Professor of Obstetrics & Gynaecology MLB Medical College, Jhansi whose valuable guidance and supervision led we to carry out thus work. The very fact this work has been accomplished is a mark of her gracious direction, constructive criticism and refreshing encouragement. I am very thankful for her untiring efforts and constant supervision throughout the study.

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(Kalpana Kumari)

Dated : 31/1/07

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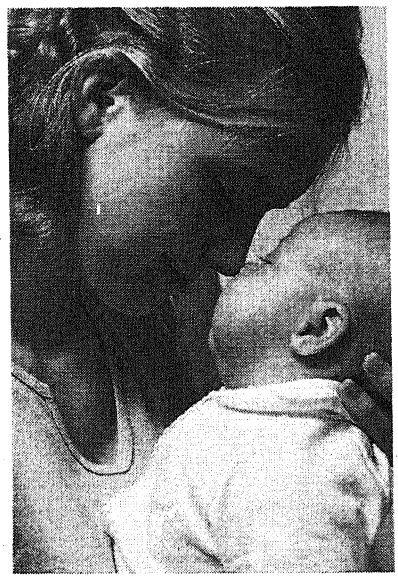


INTRODUCTION

INTRODUCTION

Pain is as old as evaluation of life. All the definition of pain seems to be incomplete. It can not be defined completely. It is a subjective sensation which varies individual to individual. To make whole world pain free medical research is continue. Various methods have been developed to get rid of pain.

The birth of the babies is one of the important and momentous events in the life of a women. Painless child birth and short duration labour has been the desire of every women and constant aim of the obstetrician.

Most women suffer unbearable pain and distress during labour through centuries and thought of impending labour make them nervous and dampens their morale.

Enlightened physicians have been concerned with alleviation of pain during labour, they have in the past administered drugs and provided sympathetic support to mitigate fear and pain of childbirth.

Unrelieved stress in labour produce increased plasma cortisol and catecholamine which may reduce uteroplacental blood flow, increased sympathetic stimulation caused by pain may lead to elevated levels of lactic acid and Free fatty acid which aggravate maternal metabolic acidosis. It further contributes to lowering of foetal PH and diminished

foetal oxygenation. So every labour should be managed with some pain relieving measures.

The descriptions of peripheral pain pathway proposed by Clecland in 1993 has been modified by Boniea and is fundamental to any consideration of obstetric analegesia.

During the first stage of labour uterine contraction causes streching, tearing and distortion and possibly ischemia of the uterine tissue, whilst simultaneously dialatation of the cervix and streching of the lower uterine segment is occuring.

The intensity of the pain increases progressively with the rising strength of contraction and these painful stimuli are transmitted by A. § and C fibers which accompany sympathatic pathway through the pelvic inferior, middle and superior hypogastric plexsus, the lumber sympathetic chain, the white rami or the spinal nerve T_{10}, T_{11}, T_{12}, L_1 and the posterior roots of these nerve to reach the spinal cord. In early labour only the nerve roots of T_{11} and T_{12} are involved, but as the intensity of contractions increased, T_{10} and L_1 are recruited.

In second stage of labour, pain caused by distention of the pelvic structure and perineum following descent of the presenting part is added to the pain of uterine contractions although, once cervical dilatation is complete the pain induced by contractions may become less intense. The uterine pain continue to be reffered to T_{10} - T_{11} while the pain produced by streching or pressure exerted on intrapelvic

structure, including the peritoneum, bladder, urethra, and rectum is referred to sacral segments. Pressure on the roots of the lumbosacral plexus may menifest itself as pain felt low in the back or in the thighs. Pain produced by streching the perineum is transmitted by the pudendal nerve (S_2 3,4) and part by the posterior cutaneous nerve of the thigh (S_2 3) the genito femoral nerve (L_1 2) and the illioinguinal nerve (L_1) .

The responsibility of adequate obstetrical analgesic must be accepted by obstetrician. It is quite often seen, that if adequate analgesia is given to the women during acceleration phase of labour, she tolerate second stage and delivery in a better way. But while taking any measure for pain alleviation of mother any complication which may taken place in foetus in uterus, must be taken care off.

Till now every known analgesic / anaesthetic drug and methods both scientific and psychological either alone or in combination have been tried for painless vaginal delivery.

These include

(I) Non pharmacological Methods :-

(a) Psychoprophylaxis

(i) Lamaze method

(b) Leboyer method

(b) Hypnosis

(c) Electro analgesia

(d) Transcutaneous electrical nerve stimulation (TENS)

(II) Systemic Analgesia Sedatives and Anxiolytic drug like:-

(a) Pathedine (b) Morphine (c) Pentazocine

(d) Ketamine (f) Promethazine.

(III) Inhalation Analgesics like:-

(a) Trilene (b) Entonox (c) Methoxy fluarane (d) Enflurane

(IV) Regional Analgesia like:-

Epidural block- lumber and caudal

Subarachnoid block, Paracervical block

Pudendal nerve block and local infiltration.

CRITERIA FOR AN IDEAL OBSTETRIC ANALGESIA AGENT

1- It should be easy to administer with wide margin of safety.

2- It should not interfere with uterine contraction .

3- It should be effective analgesia throughout painful period of labour .

4- It should not have depressant effect on the maternal respiratory or cardiovascular system.

5- It should not have depressant effects on the progress of labour.

6- It should not have depressant effect on the baby before or after delivery.

7- It should not cause unpleasant maternal side effect.

8- It should have high technical success rate.

None of the measure available fulfil all criterias of idealism. Hence an ideal obstetric analgesia agent / technique is yet to come. Analgesic as and when employed by skilled person, may be beneficial rather than determental to both mother and foetus.

"The American College of Obstetrician and Gynecologist and American Academy of Pediatrics (1992) has recently reafirmed guideline concerning anesthesia care.

Some risk factors discribed by A.C.O.G. are-

- Short structure or short neck.
- Marked obesity.
- Severe oedema, of face and neck.
- Protuberant teeth or difficulty in opening the mouth.

- Asthma or other serious medical or obstetrical complications.

- Previous history of anesthetic complications.

TRAMADOL HYDROCHLORIDE :-

Tramadol is relatively new addition to international analgesia armoury. It has a very individual pharmacological profile and in many aspects, it approach the ideal one.

Tramadol properties are the result of a synergy between two different Analgesic action, it is effective at both the main sites of analgesic action within the central nervous system.

I- ***DIRECT ACTION ON OPIOID RECEPTORS :-***

Tramadol binds weakly to the opiod receptors, inhibiting the transmission of pain impluses and altering pain perception. This binding capacity at the receptors is 6000 times less than Morphine.

II- ***DIRECT ACTION ON THE DESCENDING INHIBITORY PATHWAY :-***

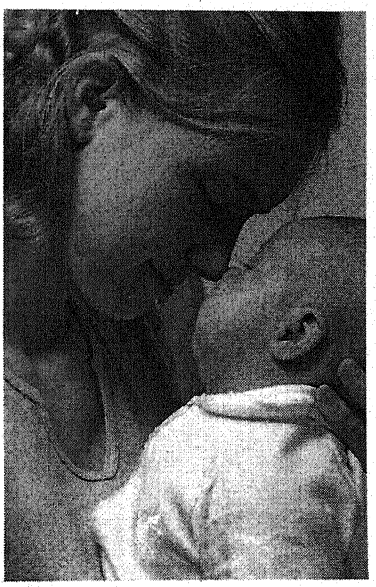
Tramadol also reduces the reuptake of serotonin & Nor adrenaline in the descending spinal inhibitory system and there by enhancing the effectiveness of the inhibitory pathway (i.e. Modulating pain Impulse Transmission).

Thus tramadol combines the mechanism of action of the opioids and Tricyclic Antidepresent.

Individually these actions are weak., but together they produce a powerful Analgesia because of synergy.

There fore it is now being widely used for post-operative and obstetric analgesia, acute and chronic pain syndromes, pain associated with malignancy etc.

In therapeutic doses it does not induce respiratory depression or cardiac effects of any clinical significance and dependence potential is low.



AIMS AND OBJECTIVES

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1) To study -

   a) The onset of pain relief

   b) Degree of pain relief

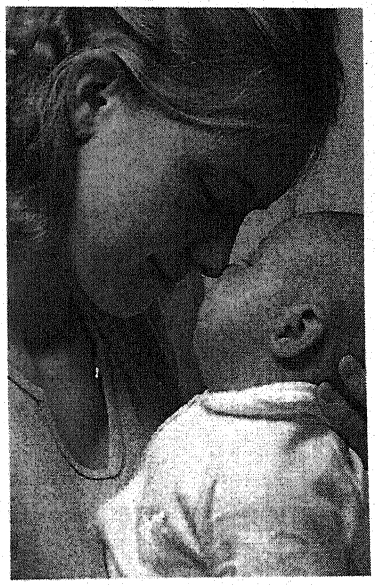
   after giving the tramadol analgesia in labour.

2) To study the efficiency of central acting synthetic opioid tramadol in patient of term pregnancy & presence of moderate uterine contraction & good cervical effacement.

3) Effect of tramadol on vital parameters.

4) To study the effect of tramadol analgesia on mode of delivery and neonatal outcome.

5) To study the effect of tramadol analgesia on fetal heart rate.



REVIEW OF LITERATURE

REVIEW OF LITERATURE

Pain many serve a number of useful function. It may be protective, defensive or diagnostic. The protective effect is most obvious in avoiding trauma. Pain has an obviously diagnostic function in the onset of labour and many other circumstances.

Pain of parturition is considered to be a part of normal physiological process. Labour pains vary, much in extent to which they cause pain and women vary, much in the extent to which they are distressed by it. To alleviate this pain, immemorable attempts have been made ranging from acupunturc and psychoprophylaxis to TECOTA inhaler & TENS.

There are so many factors which influence the degree of pain. They- mother's racial, historical, religious background and a variety of psychological and environment factors.

In the ancient era, various mechanical torture devices were used to reduce the intensity of pain perception by the parturient.

Later human race opened new ways in every field of life and newer advances were made in medical science. Anatomical and neurological factors involved in pain pathways were discovered and it led to the use of various naturally available analgesics.

The earlier writers like the Prophet of Jermiah have written extensively about the subject of pain during child birth.

Hypnosis has been used periodically science. Anton Mesmer first wrote about it in 1771 and child birth without pain, employing relation and a naturalistic approach is an old and frequently revived (Grantley Dich-Read 1890-1959).

During the last century, chloral hydrate (Liebreich 1869) tincture of opium and bromide a popular analgesia mixture, designed lo encourage sleep, rather than to relieve pain.

Opium (papaver Somniferum) in various form is being used since before the time of christ for the relief of pain. Its principle active ingredient morphine was isolated in 1806 by Serturncr and is still the prototype of the class of drug known by names as narcotic analgesics, opiates & opioids, Foetal respiratory depression is its chief disadvantage. It was first used in obstetrics by Jaeger in 1910.

Among international analgesics Ether was the first and was given by J.Y. simpson on 19th January 1847. The following year Walter Channing, Prof, of obst at Harvard university published his book A treatise on etherisation in child birth illustrated by 581 cases.

At turn of 19th century Chlorofom was introduced by Sir. James young Simpson and the employed the drug for delivery labour pains, first time on 8th Nov. 1847.When Scottish Calvinists objected on moral and scriptmal ground to the relief of pain in labour.

At the same time, Walter charming in U.S.A was using Chloroform as general anaesthetic agent for conducting all obstetrical procedure and deliveries.

Sir John Snow (1853) used Chloroform for Queen Victoria during the birth of her eight child. Prince Leopald, Queen was much relieved from her distressing labour pains, so by them, use of chloroform as a obstetrics analgesics was legalised and pain relief during labour become really respectable.

Narcose a la veine - a technique describe was in John 1 Snow's book ***"On chloroform and other Anaesthetics".*** The most common way of administration was the open drop method on by blowing air over chloroform vapour.

The drug was first used by A.K. Gardner in 1848 in U.S.A.

In 1880 a Russian Scientist Klikowitsch observed that use of nitrous oxide in combination with Oxygen gave a great relief to the parturient. He conducted his study over 25 females and found that with the onset of contractions 3-4 deep inhalations of above mentioned mixture, relieved the pain without altering the consciousness of the Pt. Nitrous oxide has held a long reign and is still a valuable analgesic today.

By the beginning of 20th Century Descarter model highlighted that pain, sensed by free nerve endings, transmitted Via peripheral nerves reaches spinal end and from here to brain in anterior latral

spinothallemic tract. This proper understanding of innervation of genital tract led Germany to use spinal aneasthesia for reliving labour pain.

At the same time a neurologist Dr. Cathelian employed caudal and epidural analgesia in obstetrics.

It was Von Steinbuchal (1903) who used combination of Scopolamine & Morphine in child birth, a phenomenon termed twilighit sleep.

Barbiturates was firstly used by Emil Fischer (1902) and Von Mering Hamblam (1921) & Cleisz (1923) also used the drug in France for same purpose.

Phenobarbitone appeared in 1912, Permocton and Pentobarbiton come later and Somnifaine in 1924.

It was Von Steinbuchal (1903) who was used combination of Scopolamine & Morphin in labour pain, a phenomenon termed 'twilight sleep'.

Pudendal block was first described by Muller in 1908. In 1909 Dr. J. Clarence after his long research, popularized used of Nitrous oxide, oxygen mixture in obstetrics Entonox was advocated by Tunstall in 1961.

Later in 1971, Rosen described used of methoxyfluarane and trilene in air.

In 1922, Gallert carried out first Para cervical block and he is considered father of para cervical block.

In 1932 John Clecland studied the nervous pathway involved in conduction of pain during labour. He reported use of para cervical block with low caudal anesthetics for labour pain management.

A research paper was published in 1938 by Graffagnino of New Orleans on use of epidural anesthesia. It is a very successful method of painless delivery. This procedure needs a skilled anesthetist and a trained staff for continuous foetal monitoring but as patient percieves less sensation, chances of instrumental delivery are increased.

Pethedine was used by Benthin in germany in 1940. In 1944, Read emphasized that intensity of pain during labour related in the large measure to emotional tension. So every women should be well informed properly about physiology of labour.

In 1946 Hellman used sodium pentothal in his study over 300 patient. The effect on pain relief was removable, but its major side effect was prolonged labour and foetal respiratory depression.

Decompression suits were proposed in 1959.

Lamaze 1970 developed psychoprophylaxis and is currently most popular from of psychological aneasthesia. The technique which relies on positive conditioning and patient education regarding the process of childbirth, is on the base on the belief that the pain of labour and

delivery can be suppressed by re-organization of cerebral cortical activity.

Here women is trained that when uterine contraction start, she should inhale and exhale in a specific manner. In this way she can suppress her pain.

The labor technique calls for calm and soft music at delivery.

Naloxone a major advance on treatment of respiratory. depression in mother and infants was first used by clark in 1971.

Riffel and coworker in 1973 evaluated effect of meperidine for labour analgesia.

Moore J. MC Nabb T. G. et al in 1971 used ketamine as induction agent in 25 patients undergoing caesarean section and as a sole agent for 53 vaginal obstetrics procedure. It's intense analgesic action and ease of airway maintenance in light aneasthesia were the main feature with an acceptable low incidence of side effect and sequelae Depression of the infant's was minimal although hypertonous was noted on two occasions.

Ketamine is a then cyclidin derivatives. It is different from other anaesthetic induction agent because it has significant analgesic effect. It does not depress the cardiovascular and respiratory system / 22 It does possess some of the worrisome adverse psychological effects found with the other phencyclidines.

But it produces during undesirable phycological reaction, which occur during awakening from ketamine anaesthesia are - vivid dreaming, extra corporeal experiences (sence or floating out of body) and illusions (the misinterpretations of real, external sensory experience).

They occur in the first hour of emergence and usually abate with in one to several hours. Factor that affect the incidence of emergence reactions arc age, dose, gender, psychological susceptibility and concurrent drugs as proved by Corssen G et al, Dundee JW et al, Sussman DR etal. Of norepinephrine, which can be in venous blood.

A preliminary study by ***Chadoff & Stella*** (1966) suggested that ketamine might be an effective agent for use in particular. Earlier studies utilizing ketamine for analgesia during routine vaginal deliveries demonstrated a number of maternal compication viz. Depressed infants and low Apgar score etc. These problems were shows to be dose related.

Mooe, J., Mc Nabb T.G. et al in 1971 used ketamine as induction agent in 25 patients undergoing cesarean section and as a sole agent for 53 vaginal obstetric procedures. Its intense analgesic action and case of airway maintenance in light anaesthesia were the main features with an acceptably low incidence of side effects and sequele. Depression of the infant was minimal although hypertonus was noted on two occasions.

Little and Coworders (1972) Utilized primary doses of 1.5 and 2.2 mg/kg body weight followed by a continuous infusion of ketamine (0.11 and 0.08 mg/kg/min), This technique resulted in maternal complications like apnoea, laryngospasm , nausea , hypertension as well as neonatal complications. These investigations concluded that lower dosages were effective with fewer complications.

Toshio J. Akamalsu et al. (1973) observed that primary dose of 0.2 - 0.4 mg/kg of ketamine, followed by incremental doses to a total of 100mg resulted in profound analgesia of short duration, sufficient for vaginal delivery.

At these doses, they encountered no untoward effects in mother or foetus.

In the same year Michael W. Galbert et al. (1973) used ketamine in 49 patients and found it a potentially very useful agent in the parturient, at term , undergoing outlet forceps vaginal delivery . Onset of analgesia was rapid and pleasant with negligible effect on neonate.

The action of this agent on airway dynamics and cardiovascular system. It may make it particularly useful in patients with co-existent shock or bronchospastic pulmonary disease.

Janeczko GF et al (1974) found keatmine generally satisfactory analgesia in 370 normal vaginal deliveries. Although Apgar scores with low dose ketamine (0.3 mg/1b) for delivery were comparable to those seen with other general anaesthesia techniques, a normal dose of

ketamine for anaesthesia (1mg/1b) resulted in low Apgar score. Patient acceptance was excellent.

Robert Hodgekinson et al (1977) applied neonatal neurobehavioral tests in neonates delivered under ketamine - nitrousoxide - anaesthesia , ketamine -Thiopentonc - N20 - anaesthesia and epidural anaesthesia . This study revealed the greatest percentage of high Apgar scores in epidural groups , the lowest after thiopantone and intermediate in ketamine group.

A. L. Maduska et al (1978) studied arterial blood gases In mothers and infants during ketamine anaesthesia (1mg/kg). They found that there was statistically insignificant change in ph; pa Co2 and Apgar score between ketamine and control group in either mother or infant.

Marx G.F. ct al (1979) studied the effect of ketamine on uterine pressure and found that analgesic dose (0.2 - 0.4/kg) intravenous produced no significant effects, while large induction dose (1 mg/kg) intravenous. Produced increase in intensity of uterine contraction.

Sharma S. & Parekh P. (1993) used ketamine for painless labour found that bearing effect was good, neonatal outcome was not affected. There were minimal side effects at low dose and there was no significant change in vital parameters and no 3rd stage complication.

TRAMADOL HYDROCHILORIDE :-

Tramadol is a relatively new addition to the international analgesic armoury. It has a very individual pharmocological profile and in many aspects it approaches the ideal one.

Clinician and patient alike have long desired a therapeutic agent capable of providing the high level of pain relief for which the opioids are unrivaled without the cost of potential life threating and atleast unpleasant adverse effects commonly associated with drug such as morphine and pathedine.

A synthetic Opioid agent tramadol developed in Europe offers a significant advance towards achieving this goal. It is a fairly strong analgesic with a potency similar to that of pethidine but appears to produce less respiratory depression with minimum dependence potential than comparable opioids.

Although Naloxone can completely block the antinocioptive effect of tramadol in animal pain models & sensitive to opioids , residual affect is observed in non-opioids sensitive pain models despite pretreatment with naloxone.

Various studies to data have concluded that the centrally acting analgasic tramadol is a useful alternative to the existing opiates for relief of acute and chronic pain.

CHEMISTRY :-

Tramadol is a white bitter crystalline and odourless powder readly soluble in water and alcohal. It PKa value is 9.3 (at 293K).

The empirical formula of the base is C_{16}, H_{25} O_2 N. Hcl chemically it is (±) trans -2- (dimehtylaminemethyl) -1 - (m-methyloxyphenyl) cyclohexanol hydrochloride.

Grunenthal research has followed the natural pathway of pain suppression as indicated by mechanism of action of endogenous opioids.

It's molecular structure reflects its close relationship to morphine.

DUAL MODE OF ACTION OF TRAMADOL :-

Tramadol properties as the result of a synergy between two different Analgesic action involving a combination of opioid and non opioid receptor mechanism.

μ opiate receptors mediate analgesia and respiratory depression, while K receptors mediate analgesia and sedation.

DIRECT ACTION ON OPIOID RECEPTORS :-

Tramadol binds weakly to the opiod receptor inhibiting transmission of pain impulse and altering pain perception. This binding capacity at the μ receptors is 6000 times less than morphine.

II *DIRECT ACTION ON THE DESCENDING INHIBITORY PATHWAY* :-

Tramadol also reduces the reuptake of Serotonin & Noradrenaline in the descending spinal inhibitory system and thereby enhancing the effectiveness of the inhibitory pathway (i.e Modulating-Pain Impulse Transmission).

Thus tramadol combine the mechanism of action of the opioids and Tricyclic antidepressants. Individually these action are weak but together, they produce a powerful analgesia because of synergy.

However , this synergy of action is restricted to efficacy, but does not effect the safety profile.

ROUTE OF ADMINISTRATION :-

Tramadol may be administrated orally intramuscular, intravenous on perectal ?

PHARMACO KINETICS :

Oral absorption is quite rapid and after a short lag time, with maximum concentrations occurring after about 2 hours absorption is expected to commence in duodenum of 90%.

The relatively high oral bioavailability of about 65 % and is the highest in its class (i.e morphine, pethidine, pentozocine). Its plasma half life is about 5-6 hour.

The extremely low protein binding of about 20% therefore fewer interactions).

On intramuscular administration after 10 to 20 minute onset of action of tramadol is seen.

By intravenous route its distribution half life in initial phase is of 6 minutes followed by slower distribution phase with half life of 1.7 hours. It is mainly eliminated by hepatic metabolism and its "first pass" extraction in human is about 20%.

The maximum scrum concentration occurs with tramadol suppositories after 3.0 hours. The bioavailability of tramadol suppositories is about 70 % percent.

Tramadol has a high apparent total distribution volume, One quarter to one third of the active ingredient is recovered unchaned in urine. About 70 % of the substance is metabolised. The major biotransformation pathway are O & N demethylation. Its active metabolite O-demethyl tramadol has 4 to 200 times greater affinity for N μ receptor than tramadol. Only 0.1 % of a tramadol dose was found to be excreted in milk of lactating women.

PHARMACODYNAMICS :-

EFFECT ON RESPIRATORY SYSTEM :-

Respiratory depression has been observed only in a few patients following tramadol infusion by decreasing the sensitivity of respiratory centre its CO2 Schaffer et al (1986) Peipenbrocks S : Kietz et al used it for post operative pain and found that it does not cause respiratory depression and a non-significant decrease in slope of CO2 curve was noted.

Paravicini D et al (1982) studied effect of tramadol on haemodynamics and blood gases. Although tramadol had a variable effect on artrial blood gases, the changes were small and generally use significant compared with baseline values clinically relevant.

EFFECT ON CARDIOVASCULAR SYSTEM :-

The effect of tramadol on heart rate and blood pressure were variable hut these changes arc not statistically significant.

Karsch KR Wiagad U et al in 1979 found that at does 5-10 mg/kg intravenous, it produce slight rise in blood pressure and heart rate. Only at very high doses i.e. less than 10 mg/kg it has a direct negative inotropic effect.

Mullar M. Stoyanoy M. et al (1982) observed that lower doses, the drug has a slight lowering effect on heart rate and blood pressure.

EFFECT ON GESTROINTESTRIAL SYSTEM :-

Like other opioids, il may causes constipation but only in high doses and no gastrointestinal strain thus it is suitable for treating pain in pt of with gastric or duodenal ulcer .

Coelhu JCU Runkel N , Herfarth C el al (1986) used direct recording of electromyography activity of sphincter of oddi, to characterize the effect of Morphine Pethidinc and pentazocine . tramadol did not cause spasm of sphincter of oddi.

DEPENDANCE LIABILITY : -

In comparison of other conventional opioid (mophine pethidine) tramadol has a very low dependence potential.

Friderich E Feigenhawer & Jongsccha P et al in his animal studies fund that development of tolarence is slight or absent in chronic dosing similar result were noted by other investigators also. In volunteers studies of psychotropic effects of tramadol have shown no consistent enphoric or dysphoric effect or psychic dependence with short term administrations .

SELF EFFECT : -

After Cosman & Wilsmann (1987 & 1988) the major adverse effect noted were nausea Vometting, Dizziness Sedation, Palpitation, Constipation Restlessness, Ataxia, Salivation, Mydriasis

Exophthalmus, tremors, cramps, Dyspnoea Cyanosis may be seen with intoxication or over dosages.

TRAMADOL FOR PAINLESS LABOUR **: -**

Kainz C , Joura E et al (1972) in a double blind study of tramadol and pathedine round that analgesic effect was good in both groups . No difference concerning duration of labour, F H S alteration , pattern , umbilical cord blood gases respiration pattern and Apgar Score of neonate occurred.

Bitsch M . Emrich J, Hary J, Lippach G. Rindt W. (1980) carried out a single blind comparative study. In 22 patient 50 mg inj pathidine I/M and in 23 case 50 Tramadol I/M was given as I st. dose 2^{nd} repeated doses were also given in some patient . The analgesic effect of two drugs was identical. There were no negative effect on course of delivery or the neonate after tramadol.

PH, PO_2 BE (Microblood investigation) were in normal range in both groups pre-partum and 10 min post partum.

Suvonnakote T . Thitadilok W . Atisook R. (1986) in his study used inj. tramadol 100mg slow intravenous in 55 patients . He found that slow intravenous pathedine use in 54 patients was significantly superior in on set duration and degree of analgsis than tramadol . He reported that following slow intravenous injection of tramadol 100mg or pethidinc 100mg 14.5% & 31.5% respectively neonates experienced respiratory depression (Apgar 7) However the effect was less

pronounced in tramadol group. About half of the babies required endotracheal intubation and administration of opioid antagonist Naloxone.

Prasertsawat PO, Herabutya Y, Chatur chinda K (1986) compared tramadol (100mg) with morphine (10mg) and pethedine (100mg) administered intramuscularly in women undergoing labour. They found that response rate were equivalent among the treatment . All drugs were well tolerated , side effect were limited to drowsiness palpitation, nausea and vomiting No change in vital parameters was observed and apgar scor was always greater than 7 during the first 10 minute after delivery i.e. no neonatal respiratory depression repeated drug administration was required in some patients.

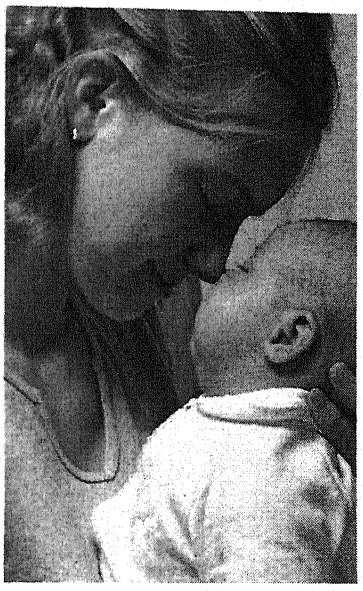
Husslein P, Kubista E, Egarter C, (1987) in a randomized comparative study of tramadol and pethedine observed that the analgesic effect of intramuscular Tramadol 100 mg was evident within 10 minutes and persised for 2 hour. The apgar score was always within normal range (⇩7 Apgar score).

Arkator VA et al (1992) compared the effect of tramadol with acupuncture analgesia and found that acupuncture analgesia was optimial during delivery without any correction thearpy, while tramadol at dose of (1.43 + 1-0.06 mg/kg) was optimal during programmed delivery.

Bredew et al (1992) studied effect of tramadol suppositories of 42 labouring women. They found good analgesia, low incidence of maternal side effects and absence of side effects on neonates.

Viegas UA et al (1993) used the drug tramadol (50,75 and 100 mg) for labour pain in 90 pregnant primiparous patient in double blind clinical trial with pethidine 75 mg for comparison. They found that Tramadol 100mg is as effective as pethidine 75mg and has a superior safety profile.

Nawani Manju & Sharma S. et al (1994) noted that use of Tramadol in labour pain have good response in 50% patient she used 100mg of Tramadol diluted in 10ml slow intravenous over 30-60 seconds for the induction of analgesia. For maintaining continuous infusion of infection. Tramadol 100mg in 500 ec of 5% dextrose was used and drip rate was adjusted according to patient's response.



MATERIALS AND METHODS

MATERIAL AND METHODS

The present study was conducted in the Department of obstric & Gynaecology on full term, primi & multigravida women From different socio-economic classes at M.L.B Medical College Jhansi.

A total of 100 cases were studied 50 cases were given intravenous Tramadol and 50 cases were taken as control group who did not received injection tramadol.

All uncomplicated cases were included in this study. Study group patients were given injection tramadol and its effect was observed and compared with control group.

CRITERIA FOR SELECTION OF CASES :

All cases of full term pregnancy, primi or multigravida admitted in Labour Room were studies.

Patients of Preeclampsia, eclampsia, heart disease, epilepsy, diabetics and psychiatric disorder were not included in the study.

Further cases with CPD, abnormal lie, multiple pregnancy and existing foetal distress preterm and post dated pregnancy, Rh-incompatibility were excluded from the study.

It was ensured that cases should be in early but established labour i.e. presence of regular moderate uterine contraction, good effacement of cervix with atleast 3-4 cm dilatation and well engaged cephalic pole in primi and fixed cephalic pole in multigravida.

TECHNIQUE :-

A detailed history of all the patient was taken –which included name, age., parity address, occupation, socio-economic status religion educational status, period of gestation (ascertained by last menstrual period and duration of previous menstrual cycle).

Obstetrical history regarding previous deliveries, abortions, mode of delivery, surgical intervention if any carried out was taken.

Lastly, a complete history of any chronic ailment or any associated medical disorder in the patient was taken.

A through general and systemic examination was done, General examination included.

(1) Pulse rate

(2) Temperature

(3) Blood pressure

(4) Respiratory rate

(5) Hydration

(6) Pallor

(7) Oedema

(8) Jaundice

SYSTEMATIC EXAMINATION :-

Cardiovascular system, respiratory system, central nervous systemic examination was done.

OBSTETRICAL EXAMINATION :-

1. Per abdominal examination

- Height of fundus
- Lie, presentation position
- Engagement of presenting part
- Foetal heart sounds
- Uterine contractions

2. Per vaginal examination included

- Dilatation of cervix
- Effacement of cervix
- Station of presenting part
- Pelvic adequacy
- Informed consent of medication was taken from herself or by her attendent

- Complete haemogram
- Blood group and Rh-typing
- Modified glucose tolerence test and complete urine examination were carried out in every case. All resuscitation measure for mother and baby were kept ready.

In group, 50 well selected cases induction of analgesia was done by giving inj. Tramadol hydrochloride 100 mg diluted in 10 ml of normal saline inravcnous slowly over 40-60 sec. For maintaining analgesia continuous infusion of inj tramadol 100 mg 2 ampouls in 500 c.c of 5% Dextrose was used and drip rate was adjusted according to patient response (10-12 drops/min or 30 ml/hr).

Following observations were made :-

❖ Time of onset and degree of pain relief was noted by enquiring the patient herself.

- Foetal heart rate was observed and after medication every 20 minutes.
- Maternal pulse (blood pressure was noted every 20 min).
- Any change in uterine contractility was observed; before and after analgesia.
- Progress of labour was monitored by descent of head and cervical dilatation.
- Induction delivery interval was observed.
- Mode of delivery recorded.
- Apgar score of baby at 1 min and 5 min was noted.
- Any adverse effects like nauses vomiting hallucination etc were noted.

Every patient received inj Methylergometrine 0.5 mg intramuscular, after delivery of anterior shoulder of baby.

Patient and baby were followed in puerperium.

GRADING OF PAIN RELIEF WAS DONE AS FOLLOWS

EFFECTIVE RELIEF OF PAIN - No sensation of pain during uterine contraction.

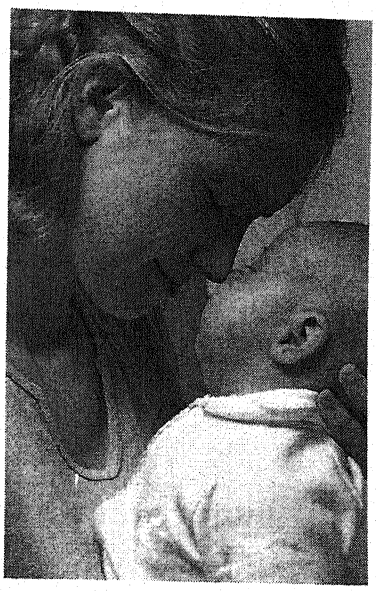
MODERATE RELIEF OF PAIN - Aware of uterine contraction and experience dull backache.

MILD RELIEF OF PAIN - Mild pain relief

NO RELIEF OF PAIN

Extra amount of drug was given to some patients at the time of episiotomy according to patient's response.

Evaluation of neonates was, done by a proforma based on Apgar assessment of newborn.



OBSERVATIONS

OBSERVATIONS

A Total of 100 patients were studied, 50 patients were studied as control & 50 Patients were given intravenous tramadol

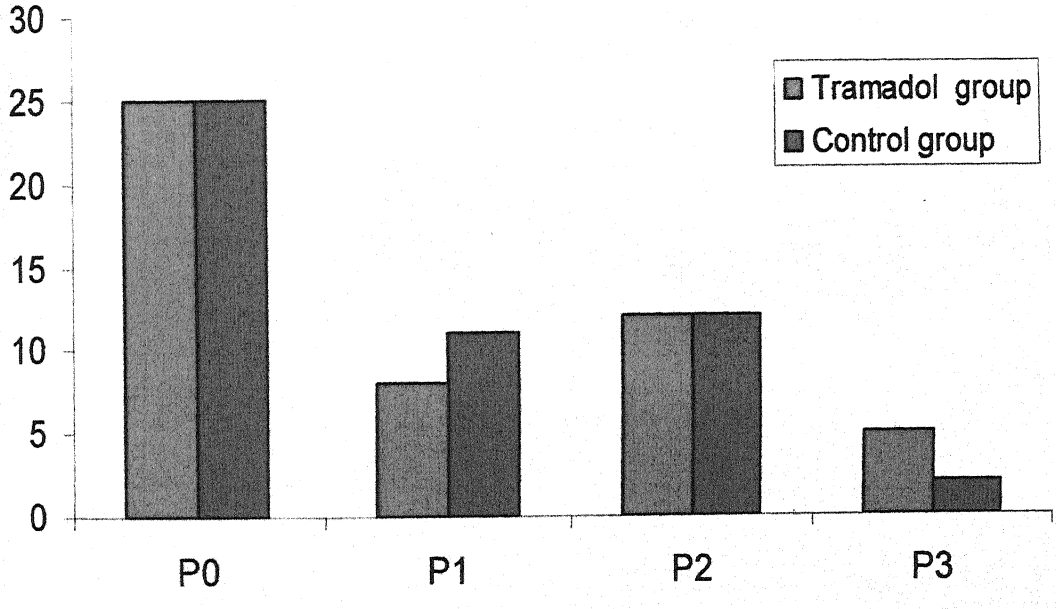
Table I Showing Parity of the patients

parity	*Tramadol group (study group)*		*Control group*	
	No.	*%*	*No.*	*%*
P_0	25	50	25	50
P_1	8	16	11	22
P_2	12	24	12	24
P_3	5	10	2	4
Total	50	100	50	100
Mean	1.94		1.82	
SD	$\pm$ 1.06		$\pm$ 0.93	

Group I vs II $p > .05$ (NS)

Among the two group 25% patients were primi gravida and 25% were multi gravida. Mean parity in tramadol group was 1.94

Showing Parity of the patients



while in control group it was 1.82 this difference was not significant statistically ($p > .05$).

Distribution of Age

Table II Showing Distribution of Age

Age	*Tramadol*				*Control*			
	Primi		*Multi*		*Primi*		*Multi*	
	No	*%*	*No*	*%*	*No*	*%*	*No*	*%*
14-18	4	16	0	-	4	16	0	-
19-23	14	56	5	20	12	48	5	20
24-28	5	20	14	56	7	28	15	60
29-33	2	8	4	16	2	8	3	12
34-38	0	-	2	8	0	-	2	8
-40	0	-	0	-	0	-	0	-
Total	25		25		25		25	
Range Yrs	17-32		22-36		16-32		22-37	
Mean	22		26.6		22.4		26.4	
SD	4		4.16		4.12		3.97	

In tramadol group the age of primi ranged 17 - 32 yrs (mean 22 ± 4) and in Multi gravid a 22-36 yrs (mean 26.6 ± 4.16).

In control group, age range of primi was 16 - 32 yrs (mean 22.4 ± 4.12) and in Multi gravida was 22 - 37 years (mean 26.4 ± 3.97).

The table shows that age factor was statistically insignificant p>.05 as compared to tramadol treated patient with the control group.

Socio Economic Group

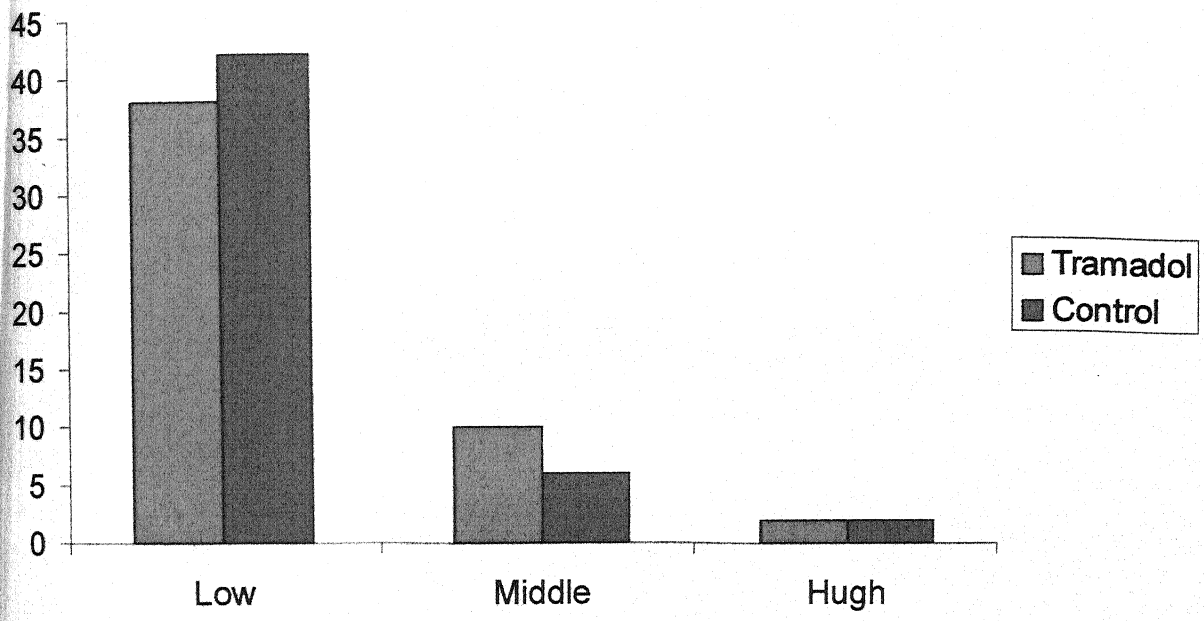
Table III Showing distribution of patients according to Socio economic Group

Socio Economic Group				
Socio economic Group	***Tramadol***		***Control***	
	No.	%	No.	%
Low	38	76	42	84
Middle	10	20	6	12
High	2	4	2	4

80 patients were of low Socio economic status 16 patients were of middle and 4 patients were of high socio-economic status.

No significant difference was observed between the study and control group regarding socio economic status.

Showing distribution of patients according to Socio economic Group



Period of Gestation

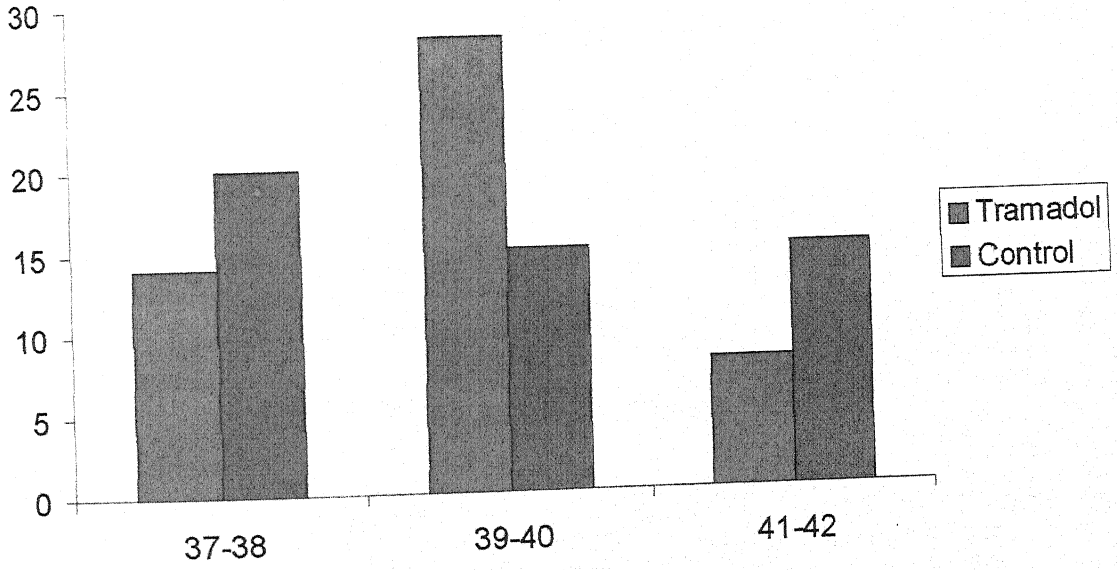
Table IV Showing Distribution of Patients According to Period of Gestation

	Tramadol			*Control*
Period of Gestation	*No.*	*%*	*No.*	*%*
37-38	14	28	20	40
39-40	28	56	15	30
41-42	8	16	15	30
Total	***50***		***50***	
Mean	***39.26***		***39.3***	
SD	***± 1.3***		***± 1.6***	

Group I vs II p>.05 (NS)

Mean gestational age was same in both group. It was 39.26 weeks for study group & 39.3 weeks in control group.

Showing Distribution of Patients According to Period of Gestation



On set of pain relief

Table V Showing On set of Pain releif

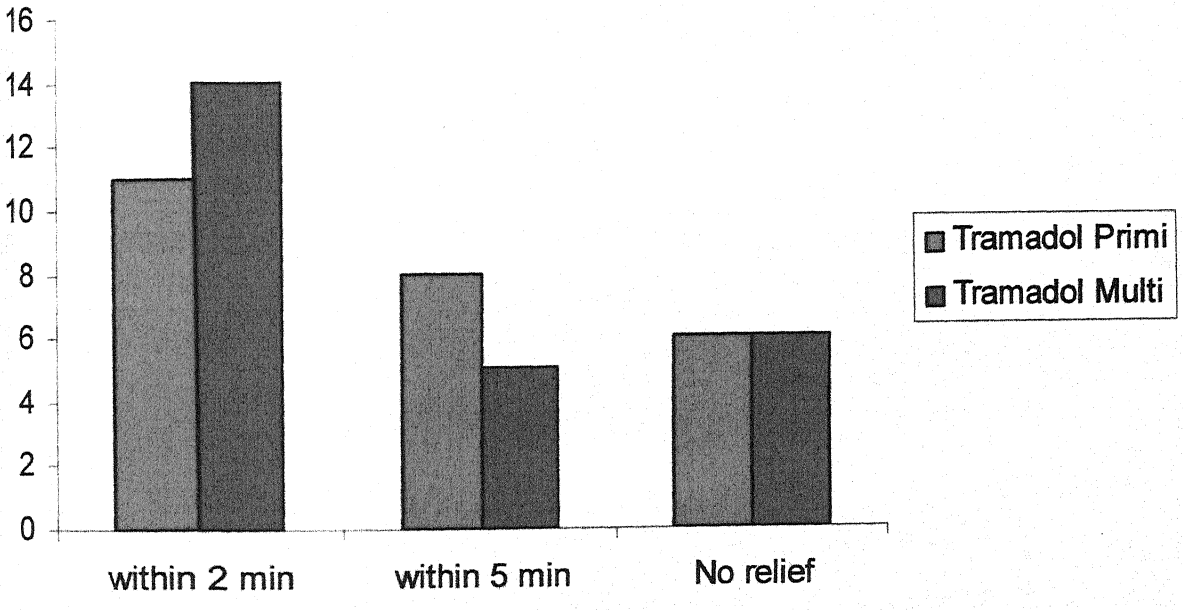
Time	*Tramadol*			
	Primi		*Multi*	
	No.	*%*	*No.*	*%*
within 2 min	11	44	14	56
within 5 min	8	32	5	20
No relief	6	24	6	24
Total	***25***		***25***	
Mean	***1.72***		***1.38***	
SD	***± 1.36***		***± 1.38***	

Pain relief within 2 min was seen in 11 primi (44%) and 14 (56%) multigravida patients.

Pain relief within 5 min was seen in 8 (32%) primi and 5 multi (20%)

However the average onset of pain relief was 1.72 min. for primi and for multi was 1.38.

Showing On set of Pain releif



Degree of Pain Relief

Table VI Showing Degree of Pain Relief

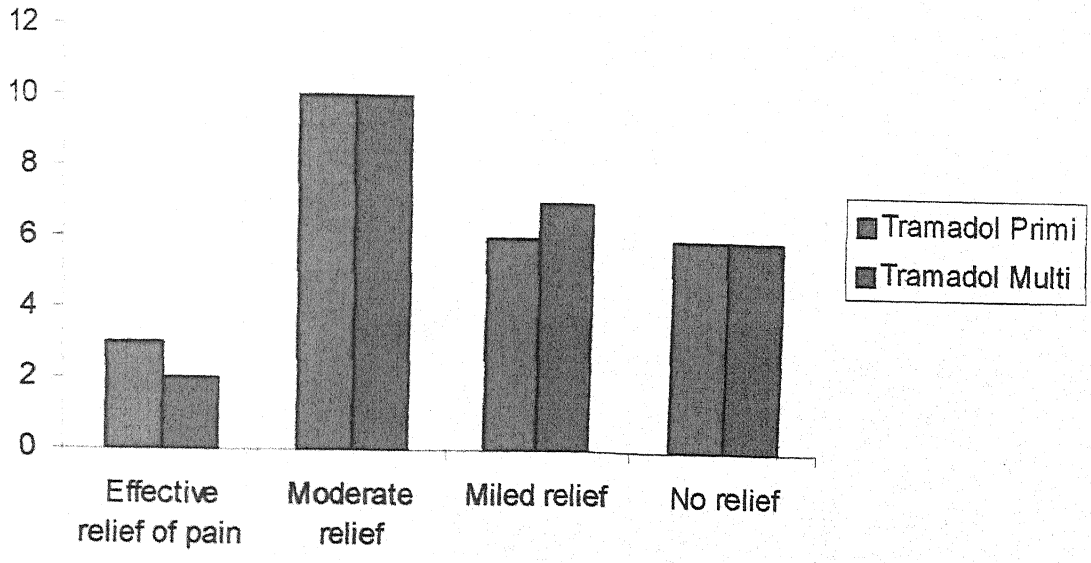
	Tramadol			
Degree of Pain relief	***Primi***		***Multi***	
	No.	***%***	***No.***	***%***
Effective relief of pain	3	12	2	8
Moderate relief	10	40	10	40
Miled relief	6	24	7	28
No relief	6	24	6	24
Total	***25***		***25***	

Majority of patient shows of moderate relief of pain and was seen in 10 (40%) primi and 10 (40%) multi gravida

No. Pain relieving "effect was seen in 6 (24%) in Primi and 6 (24%) in Multi gravida.

Mild relief experience in primi 6 (24) and multi 7 (28).

Showing Degree of Pain Relief



Systolic BP before and 30 minute after analgesia
Table VIIa

	Study Group	
	Mean	***SD***
Before analgesia	121.18	± 11.48
30 minute after analgesia	120.10	± 10.08
Change in BP	1.08	± 1.40

In study group p > .05 (NS)

Table shows variation in systolic blood pressure before and 30 minute after analgesia mean systolic BP before giving analgesia 121.18 mmHg & 30 min after was 120.10mmHg. Mean change in BP was 1.08 mmHg which was not significant p>.05 (NS).

Diastolic BP before and 30 minute after analgesia
Table VIIb

	Study Group	
	Mean	***SD***
Before analgesia	82.2	± 8.63
30 minute after analgesia	81.05	± 6.76
Change in BP	1.15	± 1.87

Table shows variation in diasystolic blood pressure before and 30 minute after analgesia mean diasystolic BP before giving analgesia was 82.2 mmHg 30 min after was 81.05 mmHg. Mean change in BP was 1.15 mmHg that was not significant p>.05 (NS).

Change in Foetal Heart Rate Pattern

Table VIII Showing Change in Utrine Contractility

Contraction	*Tramadol*			
	No	*Primi*	*No.*	*Mulli*
	No.	%	No.	%
No Change	12	48	14	56
Increased	9	36	8	32
Decreased	4	16	3	12
Total	***25***		***25***	

No. Change in uterine contractility was seen in 12 (48%) in primi and 14 (56%) in multigravida .

Increase contractility in 9 (36%) in primi and 8 (32%) in multigravida Decerease contractility in 4 (16%) in primi and 3 (12%) in multigravida.

Table IX : Showing changes in foetal heart rate during course of labour

	Tramadol				*Control*			
Change in FHR	*Primi*		*Multi*		*Primi*		*Multi*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Normal	20	84	22	88	20	80	23	92
Tachycardia	2	8	2	8	3	12	2	8
Brady cardia	3	12	2	8	2	8	-	-
Total	25		25		25		25	

In tramadol group 20 (84%) primi and 22 (88%) multigravida has normal fetal heart rate pattern.

In tramadol group, tachycardia was seen in 2(8%) of Primi and 2(8%) of multigravida patients & Brady cardia was seen in 3 (12%) of Primi and 2 (8%) of Multi gravida.

1 Primi and 1 multi gravida required LSCS as duration of labour was prolong with foetal tachycardia.

1 Primi and 1 multi gravida required LSCS because of foetal brady cardia with irregular heart rate.

In Control group 20 (80%) primi and 23 (92%) multigravida has normal FHS pattern 3 (12%) primi and 2 (8%) multi gravida had foetal tachycardia. 2 (8%) primi patients had foetal bradycardia 2 primi and 1 multi patients required LSCS due to FHS irregularity.

Induction Delivery Interval

Table X : Showing Induction Delivery Interval

	Tramadol				*Control*			
Time in Min	*Primi*		*Multi*		*Primi*		*Multi*	
	No	*%*	*No*	*%*	*No*	*%*	*No*	*%*
60 Min	0	-	1	4	0	-	6	24
60- 120min	0	-	3	12	0	-	8	32
120-180 min	8	32	10	40	4	16	4	16
180-240 min	4	16	3	12	10	40	2	8
240-300 min	4	16	2	8	4	16	2	8
300-360 min	2	8	1	4	2	8	1	4
360-480 min	2	8	1	4	1	4	0	4
480-600 min	1	4	1	4	1	4	0	-
> 600 min	1	4	0	-	1	4	0	-
	(130-610)		*(60 - 520)*		*(140-620)*		*(60 - 420)*	

Induction Delivery interval

In tramadol group :-

The range of induction delivery interval 130-610 min for primi gravida patients and 60 - 520 min for multi gravida patients.

In control Group :-

The range of induction delivery interval was 140 - 620 min for primi gravida patients and 60 - 320 min for multi gravida patients.

Table XI showing Apgar score of babies at 1 min.

Apgar Score	Tramadol				Control			
	Primi		Multi		Primi		Multi	
	No	%	No	%	No	%	No	%
4-6	3	12	2	8	2	8	1	4
7-8	19	76	18	72	20	80	20	80
9-10	3	12	5	20	3	12	4	16
Total	25		25		25		25	
Mean	*6.84*		*7.7*		*7.54*		*7.72*	
SD	±3.13		±1.26		± .98		± .92	

In study group mean apgar score for primi was 6.84 minute and mean apgar score for multi was 7.7 minute.

In control group mean apgar score for primi was 7.54 min & for multi was 7.7 min.

No significant change in apgar score in tramadol group as compared to control group (p>.05)

Table XII Showing Apgar Score of Babies at 5 minutes

Apgar Score	*Tramadol*				*Control*			
	Primi		*Multi*		*Primi*		*Multi*	
	No	*%*	*No*	*%*	*No*	*%*	*No*	*%*
4-6	1	4	0	0	1	4	1	4
7-8	3	12	5	20	4	16	3	12
9-10	21	84	20	80	20	80	21	84
Total	***25***		***25***		***25***		***25***	
Mean	***9.08***		***9.1***		***9***		***9.08***	
SD	**± 1.06**		**±.8**		**±1.09**		**± 1.06**	

No significant change in apgar score in tramadol group as compared to control group p>.05.

Among babies born by LSCS 1 baby of tramadol group and 1 baby control group required prompt resuscitative measure.

Table XIII Shows distribution of Patients according to duration of IIIrd stage of Labour

Duration	*Tramadol*				*Control*			
	Primi		*Multi*		*Primi*		*Multi*	
	No	*%*	*No*	*%*	*No*	*%*	*No*	*%*
0-5	0		1	4	0		5	20
5-10	5	20	4	16	5	20	5	20
10-15	8	32	12	48	10	40	8	32
15-20	4	16	5	20	2	8	2	8
20-25	6	24	0	-	3	12	3	12
25-30	1	4	2	8	5	20	2	8
30-35	1	4	1	4	0	-	0	-
>35	0	-	0	-	0	-	0	-
TOTAL	*25*		*25*		*25*		*25*	

In Tramadol group time taken for placental separation and expulsion ranged 8-32 minutes in primi and 5-15 in multigravida patients.

Similarly in control 8-28 minutes in primi and 4-28 minutes multigravida. Patients was the duration of Third stage of labour in control subjects. So comparison shows that effect of Tramadol in IIIrd stage of labour was insignificant.

SIDE EFFECTS :-

Table XIV Showing Incidence of Side effects in Tramadol Group:-

S.No.	*Side Effect*	*No*	*%*
1.	Nausea Vomiting	10	20
2.	Dizziness	2	4
3.	Dry Month	4	8
4.	Fatigue	2	4
5.	Elation	1	2
6.	Sweating	8	16
7.	Hot Flushes	2	4

Nausea and Vomiting was complaint of 10 Patients (20 %) of Tramadol study group . Dizziness was seen in 2 Patients (4 %). Dry Mouth in 4 Patients (8 %) Fatigue in 2 (4 %) patients, Elation of mood 1 (2%) patients. Sweating in 8 Patients (16 %) and hot flushes in 2 patients 4% .

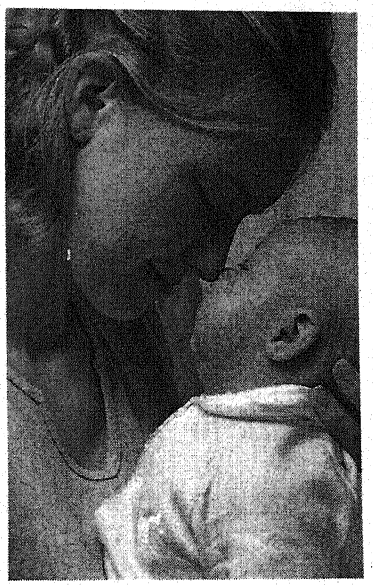
THIRD STAGE COMPLICATIONS – IF ANY

Table XV Showing Incidence ol IIIrd Stage Complication

S.No.	*Tramadol*		*Control*	
	No	*%*	*No*	*%*
1. Retained Placenta	0	-	1	2%
2. PPH (Blood loss> 500ml)	0	-	1	2%

Among complication of third stage, retained Placenta was seen in 1 patient (2 %) of control group . No such incidence was seen in study group.

Post partum haemorrhage occured in 1 (2 %) patient of control group .



DISCUSSION

DISCUSSION

Well known to the obstetrics is the Fact that fear, tension anxiety and apprehension are the etiologies of prolongation of labour , which adversely affect maternal and foetal conditions. So every labour should be managed with pain relieving measures commonly used . Analgesics for non obstetrical purposes are known to cause maternal and foetal side effects. In the present study intravenous tramadol analgesic is being evaluated to relieve the parturient women from labour pains.

Tramadol group family, strong analgesics with potency similar to pethidine and excellent patient tolerabilily is currently being evaluated more and more in women undergoing labour (Bitsch et al, 1980, Presetsawat et al, Suavonnakot et al, 1986, Viegs et al, 1993).

In our study a total of 100 patients admitted in labour Room of Maharani Laxmi bai Medical College Jhansi were studied. Out of these 100 patients 50 patient were given tramadol and remaning 50 were studied as control subjects.

In tramadol group - Induction of analgesia was done by giving injection Tramadol hydrochloride 100 mg diluted in 10 ml (Normal saline) slow intrvenous over 30-60 seconds. For maintaining

analgesia continous infusion of injection tramadol 200 mg in 500 cc of dextrose was used.

Drip rate was adjusted according to patient response at 10-20 drops per minute or 30-60 ml per hour .Infusion was stopped after delivery of placenta or after stiching episiotomy.

In present study 50% patients were primi and 50% multigravida. Among multigravida patients majority of patients tramadol (P2) i.e. 12 (24%) and in control group majority of patient i.e. 12 (24 %). No significant difference in parity wise distribution cases of both the group.

In our study the age of patients varied from 16-37 years. majority of primi patients belong to 19-23 years . In tramadol group 14 (56 %) and control 12 (48 %). There was no significance difference in age group of patient in both group.

In present study majority of patient were of low socio-economic class. In tramadol groups 76% and in control group 84% this value was 38 (76 %) and in control group it is 42 (84 %).

There was no significant difference in socio-economic status of both group.

Among this class 75% of patients were anaemic with haemoglobin 8% to 9%. 80% patients ill-literate with no knowledge of painless labour.

In our study the gestrational age among tramadol treated patients was 39 to 40 weeks and maximum patients 28 (56 %) and among control group patients the gestational age was 37 to 38 weeks and majority of patients 20 (40%). There is no significant difference in gestational age of both group.

Suvonna Kola et al (1986) reported onset of analgesic action was with in 2 minutes and was comparable to action of pethidine. Husslein et al (1987) found that onset of analgesic actions was with in 10 minute of intramuscular administration. In our present study (Table -V) also similar result were noted regarding tramadol administration as most of the patient 25 (50 %) had pain relief with in 2 minute – 11 (44 %) primi and 14 (56 %) multigravida patients.

With in 5 minute - 8 (32 %) primi and 5 (20 %) multigravida patients had pain relief.

So regarding on set of analgesic action our value were in accordance to previous research workers .

6 (24%) primi and 6 (24%) multigravida patients had no relief.

In present study degree of pain relief was noted in study group. Response was moderate to effective relief of pain).

No relief of pain was experienced by 6 (24%) primi and 6 (24%) multigravida paitent. Here our observation are different from previous authors. Bitsch et al (1980) reported no failure cases among 23 tramadol treated paitent while comparing its effect with pethidinc in parturient women 'Good' response was noted in 80% paitent by Prasertsawal et al (1986).Similar reports were given by Kainz et al (1992), Vieggas et al (1993) but Suvonna Kote et al (1986) reported that 55% paitent did not obtain adequate analgesia our results make similarty with his study and also comparable with result of Sarkar and Mukhopadhyay (1997). Usha Rani Sharma & R.S. Verma (1999).

We also studied effect of injection tramadol on vital parameter during, labour. In large number of patients an increase in heart rate by 20-40 beats per minute while tramadol administered this value was exactly similar by Karsch et al (1979), Muller et al (1982) Panavacini et al (1982).

Respiratory rates was not affected in any patients among study groups.

Among the 50 study patients of tramadol group increase in uterine contraction was seen 17(34%) patients, Littlie el al (1972)

and Marx el al (1979) was found that induction dose produced increase in intensity of uterine contraction. In 7(14%) contraction were decreased and in majority 26(52%) of patients contractions were unchanged.

In our study change in foetal heart rate pattern throughout course of labour is shown (Table X). In tramadol group patient 20(84%) primi and 22(88%) multigravida patient had normal foetal heart rate pattern. 2(8%) primi and 2(8%) multigravida had tachycardia. It was up to range of 180 per min. along with prolonged labour. So 1 primi and 1 multigravida required LSCS.

Rest of the patient responded well to conservative management.

Foetal bradycardia was seen in 3 (12%) primi and 2(8%) multigravida paitent. Bradycardia lasted up to 5-10 min in most of the patients except 2 (8%) in tramadol series (Bitsen et al did not find any incidence of foetal bradycardia in his series). One primi (4%) and 1 multi (4%) required LSCS because of bradycardia with FHS irregularity. Rest of the paitent responded well to conventional treatment. Here our results match with the result of Presertasawat et al 1986.

In control group foetal tachycardia was observed in 3 (12%) primi and 2 (8%) multigravida palient ; of which 2(8%) primi and 1(4%) multigravida underwent LSCS .

In one primi due to associated undiagnosed Cephalopelvic disproportion & one primi and one multigravida due to foetal distress, Rest of the patients well to conventional treatment. In comparison we find that there was no depressant effect on foetus in utero of tramadol. Foetal heart rate pattern were same as of control group.

We compared induction delivery interval between different study groups i.e. duration from 4 cm dialatation of cervix up to delivery of baby. It reflects effect of drug on progress of labour.

In tramadol groups the range of induction delivery interval was 130-610 min. In primi patient minimum rate of cervical dilation was 0.8-1.3 cm. perhr. In multigravida maximum 10(40%) patient had induction delivery interval 120-180mn. Rate of cervical dilatation of multigravida patient was 1-1.5 cm/hr. Expulsive efforts were found to he effected No patient required additional amount of meditation during episitomy. In control group the range of induction delivery interval in primi patient was 140-620min. and multigravida patient was 60-420 min. So Tramadol does not appear to effect progress of labour Bitsch et al (1980). Husslein el al (1987) Kainz et

al (1992) noted in their studies the tramadol docs not affect progress of labour and mode of delivery In our study indicates that mode of delivery was comparable to control cases as most of the primi i.e. 23(92%) and most of nuiltigravida patients i.e. 24 (96%) patients had spontaneous vaginal delivery, Syntocinon augmentation was required in 6(12%) patients .

There was no significant difference in incidence of out let forceps applications and caesarean section in tramadol group when compare with control cases. Thus our observation correlates with other research workers.

In our study patient 7(7%) patient had delivery by abdominal route. Among them 4(4%) were primi and 3(3%) multigravida patient. In tramadol group 1(4%) primi and 1 (4%) multi required caesarean section due to non progress of labour and foetal tachycardia. Foetal distress alone was the indication of 1(4%) and primi and 1(4%) mulligravida patient of control group.

Undiagnosed cephalopelvic disproportion was the indication of caesarean section 1(4%) primi patient of control group.

Effect of the drug on neonates born was evaluated by record of Apgar scores of new born babies of our study shows Apgar score of neonates 60sec. after, birth including birth by caesarean section. In our study most of the babies 73(73%) were having an Apgar score of

equal to or more then 7, less then 5 Apgar score was not found in any baby.

In tramadol group patients less then 6 Apgar score was found in 20%. In most of the patients Apgar score was always more then 7. Bitsch et al (1980), Husslein et al (1987) Kainz et al (1992) found an Apgar score or greater then or equal to 7 always. There was no significant difference in apgar score in tramadol group as compared to control group.

Apgar score of babies born at 5 min.- In tramadol group was found in 10 (40%) babies had 9. In control group 11(44%) babies had similar score, Apgar score 10 was found 11 (44%) tramadol group babies and 10 (40%) babies control groups. On comparing the effect of drug on neonates was insignificant. Here our results matches with the result of Nawani Manju & Sharma S.(1994).

Prasertswal reported that Apgar score was always move than 7 in his study group babies. Suvonnakote et al (1986) reported that 14.5% neonates experienced respiratory depression and half of them required endotracheal intubation and Naloxone administration. Viegass et al 1993 reported absence side effects on new born while using, Tramadol for labour analgesia. Ventilatory frequency of new horn babies tends to be higher in Tramadol group babies while

comparing the drug with ketamine for labour pains Husslien in 1987).

Apgar score of babies born in tramadol group was compared to the control group indicating that tramadol does not depressed respiratory centre of neonates.

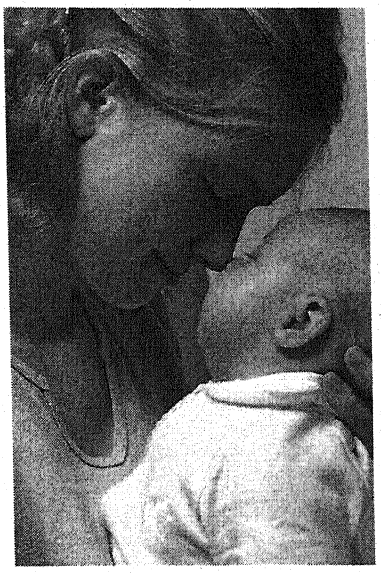
In tramadol group time taken for placental seperation & expulsion ranged 8-32 min primi 5-15min in multi patient. Similarly in control group 8-28 min in primi 4-28 min in multi. So there was no significant difference for placental seperation in both group.

The incidence of side effects was also observed in parturient women receiving Tramadol analgesia. Nausea and vomiting was the chief side effect seen incidence of 10 (20%) patients. Another chief side effect noted were sweating 8(16%) patients and dryness of mouth 4(8%). Other side effects were fatigue 2 (4%) patients dizziness in 2 (4%) patients elation of mood in 1 (2%) patients hot flushes 2 (4%) patients. However addition of antiemetic does not appear to reduce incidence of side effect. (Kainz et al (1992). Husslein et al (1987) reported the consuming the side effect tramadol highly contrasted with pethidine. There were less cases if weariness and somnolence.

Incidence of third stage complications was also noted in patients of both groups. In tramadol group no patients had retained

placenta but one patients (2%) had postpartum blood loss of more then 500cc. Retained placenta was seen in 1(2%) patients of control of group and required manual removal of placenta under general anesthesia. So we does not find that tramadol a labour anlgesia appear to increased third stage complication.

The study also shows follow up of all neonates in tramadol group and control group, 7(4%) babies had physiological jaundice. In control group 5(10%) babies had jaundice and 5(10%) babies had upper respiratory tract infection.



SUMMARY AND CONCLUSION

SUMMARY & CONCLUSION

One hundred cases were studied 50 cases were taken as control group subjects, 50 cases were given intravenous Tramadol. The study concluded :

1. 50% patients were primi and 50% patients were multigravida in each study group.

2. The age of primi range 21.5-32years and in multigravida. 22-36.5 years.

3. The Maximum number of patients studied were of low socioeconomic group.

4. The gestational age of patients studied was range 37 42weeks.

5. The onset of analgesic action of within 2 minutes after tramadol administrations patients was seen in 44% of primi and 56% of multigravida patients.

6. Effective pain relief to modrate pain relief response was seen in 36% tramadol receiving primi 36% in multigravida. No pain relief was seen in 24% primi gravida and 24% multigravida patients.

7. Increase in heart rate by 10-30 per miniuts was seen in 34% patients of tramadol groups. Increase in systolic blood pressure by 20mmllg was seen in 50% patients in Tramadol treated patients. Increase diastolic blood pressure by 20mm Hg was seen in 15% patients of tramadol group . No change in respiratory rate was seen in this drug.

8. Increase in uterine contractions was observed in 34% patients of tramadol group. Contractions were unchanged in 52% patients.

9. Foetal heart rate pattern were unchanged in most of the patients throughout labour. So Tramadol does not have any effect on foetus.

10. Induction Delivery interval In two groups, was almost similar progress of labour did not appear to be effected by tramadol.

11. Tramadol administration does not effect mode of delivery significantly.

12. Indication of lower segment cesarean section in study group patients were foetal distress (8%) non progress of labour (4%) and undiagnosed cephalopelvic disproportion (4%).

13. One minute Apgar score 7 was seen in 74% patients of tramadol group, this value in comparable control subject was in 78% patients .

14. Five minute Apgar score was 9 in most of the patients of study group i.e., 44% in tramadol group and 40% in control group neonates.

15. Placenta and membrane were delivered within 15 minute following delivery of babies in 60% patients of tramadol group and 56% patients of control group.

16. Main side effect of tramadol group were nausea, vomiting, fatigue, dryness of mouth dizziness sweating and hot Hushes.

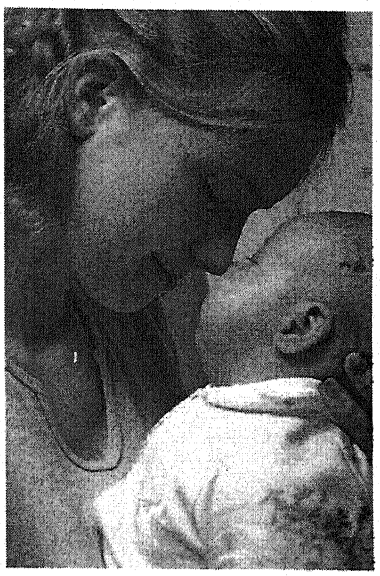
17. Only one cases of third stage complication i;e, post partum haemorrhage was encountered in Tramadol analgesic patients no increase of third stage complication was seen with use of Tramadol.

18. No significant neonatal morbidity was seen in study group.

After close analysis of observations we concluded that Tramadol is effective and acceptable analgesic in normal labour if given in proper doses as an intravenous infusion provided criteria for selection of patients are maintained.

In addition tramadol given better pain relief, shortens the labour and is safe for mother and baby.

In view of negligeable maternal & foetal side effect & it may be used as a convenient and cost effective remedy for pain less labour.



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